

WHAT IS CLAIMED IS:

1. A microfluidic device, comprising:
a body structure;
at least one microscale channel disposed within said structure;
means for introducing a fluid stream into said channel;
driving means, for propelling said fluid through said channel;
and an microelectronic chip located within said body structure and
capable of being coupled to an external power source without physical
contact, for storing information relative to said device and for
controlling operation of said device such that said microelectronic chip
can be controlled remotely.
2. The microfluidic device of claim 1, wherein said microelectronic chip is
coupled to an external power source by means of RF.
3. The microfluidic device of claim 1, wherein said microelectronic chip is
coupled to an external power source by means of infrared radiation.
4. The microfluidic device of claim 1, wherein said microelectronic chip is
coupled to an external power source by means of a magnetic field.
5. The microfluidic device of claim 1, wherein said microelectronic chip is
coupled to an external power source by means of microwave radiation.
6. The microfluidic device of claim 1, wherein said microelectronic chip is
capable of being programmed with data containing information for carrying out
specific functions in the operation of said device.
7. The microfluidic device of claim 6, wherein said specific function is to
uniquely identify said microfluidic device.

8. The microfluidic device of claim 6, wherein said specific function is to provide data for calibrating said microfluidic device.

9. The microfluidic device of claim 6, wherein said specific function is to detect the presence or concentration of a substance contained within said microfluidic device.

10. The microfluidic device of claim 6, wherein said specific function is to move fluids through said microfluidic device.

11. The microfluidic device of claim 1, wherein said device is implantable within the body of a human or an animal.

12. The microfluidic device of claim 11, further comprising a control device, located remote from said body for providing energy for controlling operation of said microfluidic device.

13. The microfluidic device of claim 12, wherein said microfluidic device is programmable by said control device which is external to said body.

14. The device of claim 1, wherein said microfluidic device further comprises detection means located within said device.

15. The device of claim 14, wherein said detection means comprises a T-Sensor.

16. The device of claim 1, wherein said microfluidic device further includes separation means located within said device.

17. The device of claim 11, wherein said microfluidic device further includes means for delivering a chemical substance into said body.

18. The device of claim 11, wherein said microfluidic device further includes means for controlling a function of said human or animal.

19. A microfluidic device, comprising:

a body structure;

at least one microscale channel disposed within said structure;

means for introducing a fluid stream into said channel;

means for receiving radio energy;

a microelectronic chip, located within said body structure and coupled to said means for receiving radio energy, for controlling introduction means; and

means for transforming said energy into electrical power for operating said chips contained in said microfluidic device.